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ABSTRACT

This book has a two-fold purpose. First, it was intended as a description of the development and testing of a primary school fraction program, presently in practice. This project seeks to develop a realistic alternative to the teaching and learning of fractions. The second purpose was to produce a theory on the teaching and learning of fractions that could be an example for a theory of realistic mathematics education. The introduction gives an overview of the research and the sequential development of the course. Chapter 1, "Description of the Fraction Problem," describes an historical background of the problem created by fractions in mathematics education. Chapter 2, "Currents-Standpoint-Proposal," regards fractions from a variety of viewpoints from the background of the historical learning process. Chapter 3, "The Context of the Research," offers a framework of the circumstances and conditions of the research. Chapter 4, "The "Course in Theory and Practice", contains a general outline of the new course. Chapter 5, "Individual Portraits of the Fraction Researchers," draws portions of the individual learning processes of those 13 students who participated throughout the entire research period. Chapter 6, "Internal Evaluation of the Learning Process," illuminates the individual learning processes against the background of the type of instruction given. Chapter 7, "External or Summative Evaluation", contains the research group's results on a "cross-section test" compared to a control group. Chapter 8, "Theoretical Review", is a theoretical reflection that establishes certain links with the more general frameworks of cognitive psychology and educational psychology. (MDH)